AMENDMENTS TO CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A method of allocating or controlling ~~the~~ an amount of bits for ~~the~~ encoding of source data, including:

(i) defining ~~the~~ a target bit rate for the encoding of the source data;

(ii) defining collections of coefficients of the source data;

(iii) defining a ~~first~~ global coding order of the ~~said~~ collections of coefficients;

(iv) defining a plurality of coding units and corresponding allowable truncation points for each of said collections of coefficients;

(v) defining a ~~second~~ local coding order of ~~the~~ said coding units for each of said collections of coefficients;

(vi) defining a rate value and a distortion value for each of said coding units of each of said collections of coefficients;

(vii) defining a threshold value for each of said coding units of each of said collections of coefficients; and

(viii) encoding each of the collections of coefficients ~~wherein, starting from the first coding unit~~ in turn according to the ~~said local~~global coding order ~~of a said collection of coefficients~~, wherein if a predetermined termination criterion is not met for a particular coding unit of the plurality of coding units of one of the collections of coefficients, the ~~said~~ particular coding unit will be included in ~~the~~ an output code-stream, and if the ~~said~~ termination criterion is met, ~~the~~ an encoding of the one of the collection of coefficients is terminated ~~and no further coding unit according to the said local coding order of the said collection of coefficients will be encoded~~.

2. (Currently Amended) ~~The~~A method as claimed in claim 1 wherein said collections of coefficients of the data are code-blocks.

3. (Currently Amended) ~~The~~A method according to claim 1 in which the ~~said~~ rate value is ~~the~~ an amount of bits needed to encode the ~~said~~ particular coding unit, or a first neighboring coding unit according to the local coding order, of the ~~said~~ one of the collections of coefficients and the ~~said~~ distortion value is ~~the~~ a distortion reduction due to ~~the~~ an ~~encoding including~~ of the ~~said~~ coding unit in the output code-stream~~of the said collection of coefficients~~, or the ~~encoding including~~ of a second neighboring coding unit according to the local coding order of the ~~said~~ collection of coefficients.

4. (Currently Amended) ~~The~~A method according to claim 3 in which a rate-distortion value is computed from the ~~said~~ rate value and the ~~said~~ distortion value ~~for each said coding unit of each said collection of coefficients~~, and the ~~said~~ termination criterion is that the rate-distortion value is below a threshold.

5. (Currently Amended) ~~The~~A method according to claim 4 in which the ~~said~~ rate-distortion value is a fractional number with ~~the~~ a denominator being the ~~said~~ rate value and ~~the~~ a numerator being the ~~said~~ distortion value for each said coding unit of each said collection of coefficients.

6. (Currently Amended) ~~The~~A method according to claim 4 in which the ~~said~~ rate-distortion value is a fractional number with ~~the~~ a denominator being the ~~said~~ rate value and ~~the~~ a numerator being the ~~said~~ distortion value for each said coding unit.

7. (Currently Amended) ~~The~~A method according to claim 4 in which the threshold value is a predetermined constant common to either all the collections of coefficients, ~~or can be different values such that a predetermined value is common to~~ all the coding units of a ~~the~~ one of the collections of coefficients, or ~~can be different values for different collections of coefficients and different coding units~~fewer than all of the coding units of the one of the collections of coefficients.

8. (Currently Amended) ~~The~~ A method according to claim 4 in which the threshold value is a fractional number with ~~the~~ a denominator being ~~the~~ a difference between the target bit rate and ~~the~~ a total amount of bits used to encode all ~~the~~ past code-blocks according to the global coding order and all ~~the~~ earlier coding units of the ~~current~~ one of the collection of coefficients according to the local coding order, and ~~the~~ a numerator being ~~the~~ an amount of distortion if the encoding terminates at that coding unit or a neighboring coding unit according to the local coding order.

9. (Currently Amended) ~~The~~A method according to claim 4 in which the threshold value is ~~the~~ a product of (a) a fractional number with ~~the~~ a denominator being ~~the~~ a difference between the target bit rate and ~~the~~ a total amount of bits used to encode all ~~the~~ past collections of coefficients according to the global coding order and all ~~the~~ earlier coding units of the ~~current~~ one of the collection of coefficients according to the local coding order, and ~~the~~ a numerator being ~~the product of the~~an amount of distortion if the encoding terminates at that coding unit, or a neighboring unit according to the local coding order, and (b) an additional weighting factor.

10. (Currently Amended) ~~The~~A method according to claim 1 in which the collections of coefficients are ~~the~~ code-blocks of coefficients of the source data in ~~the~~ a data transform domain.

11. (Currently Amended) ~~A~~ The method according to claim 1 in which the collections of coefficients are ~~the~~ code-blocks of coefficients in ~~the~~ a data transform domain, and ~~the~~ each coding unit ~~can be~~is any intermediate coding pass.

12. (Currently Amended) ~~The~~A method according to claim 11 wherein the data transform domain is ~~the~~ a discrete wavelet domain in accordance with JPEG2000 and the any intermediate coding pass is ~~the~~ a significance pass, a refinement pass, or a cleanup pass ~~of~~ in accordance with JPEG2000.

13. (Currently Amended) ~~The~~A method according to claim 1 in which the collections of coefficients are ~~the~~ code-blocks of coefficients in ~~the~~ a data transform domain, and the ~~global~~ coding order is predefined.

14. (Currently Amended) ~~The~~A method according to claim 1 in which the collections of coefficients are ~~the~~ code-blocks of coefficients in ~~the~~ a data transform domain of data formed by ~~the~~ a difference of a ~~first~~ the source data and another ~~second~~ source data.

15. (Withdrawn) A method of allocating or controlling the amount of bits for the encoding of source data, including:

(i) defining the target bit rate for the encoding of the data;

(ii) defining collections of coefficients of the source data in the source data domain or in a data transform domain;

(iii) defining a first global coding order of the said collections of coefficients;

(iv) defining a plurality of coding units and corresponding allowable truncation points for each said collection of coefficients;

(v) defining a second local coding order of the said coding units for each said collection of coefficients;

(vi) defining a priority level of each said collection of coefficients;

(vii) defining a global priority level for the said data;

wherein, starting with the global priority level being the highest priority level among all collections of coefficients, all the collections of coefficients are examined one at a time, wherein for a collection of coefficients with priority level equal to the global priority level, the first un-encoded coding unit according to the local coding order is encoded and the priority level of the said collection of coefficients is reduced by one, wherein after all the collections of coefficients are examined, the global priority level is decreased by one and all the collections of coefficients are examined again, and the process continues iteratively until it terminates when the total amount of bits used is greater than the target bit rate, or when all the details of all the collections of coefficients have been encoded.

16. (Withdrawn) A method as claimed in claim 15 wherein in the case of termination when the total bits exceed the target bit rate, the last coding units being encoded immediately before the total bits exceed the target bit rate may or may not be removed from the output code-stream.

17. (Withdrawn) A method as claimed in claim 15 wherein in the case of termination when the total bits exceed the target bit rate, some additional un-encoded coding units of some code-blocks may or may not be encoded.

18. (Withdrawn) A method as claimed in claim 15 wherein said collections of coefficients are code-blocks of coefficients in a data transform domain.

19. (Withdrawn) A method of allocating or controlling the amount of bits for the encoding of source data, including: (i) defining the target bit rate for the encoding of the data;

(ii) defining collections of coefficients of the source data;

(iii) defining a first global coding order of the said collections of coefficients;

(iv) defining a plurality of coding units and corresponding allowable truncation points for each said collection of coefficients;

(v) defining a second local coding order of the said coding units for each said collection of coefficients;

(vi) defining a priority level of each said collection of coefficients;

(vii) defining a rate-distortion value for each said coding unit of each said collection of coefficients; wherein, starting with the current priority level being the highest priority level among all collections of coefficients, all the collections of coefficients are examined one at a time, wherein for a collection of coefficients with a priority level equal to the current priority level, the first un-encoded coding unit according to the local coding order is encoded and the priority level of the said collection of coefficients is reduced by one, wherein after all the collections of coefficients are examined, the current priority level is decreased by one and all the collections of coefficients are examined again, and the process continues iteratively until the total amount of bits used is greater than the target bit rate and the encoded coding

unit with the least rate-distortion slope is removed and wherein this process is repeated until the total amount of bits used is less than or equal to the target bit rate.

20. (Withdrawn) A method of allocating or controlling the amount of bits for the encoding of source data, including:

(i) defining the target bit rate for the encoding of the source data;

(ii) defining collections of coefficients of the source data;

(iii) defining a first global coding order of the said collections of coefficients;

(iv) defining a plurality of coding units and corresponding allowable truncation points for each said collection of coefficients;

(v) defining a second local coding order of the said coding units for each said collection of coefficients;

(vi) defining a priority level of each said collection of coefficients;

(vii) defining a rate-distortion value for each said coding unit of each said collection of coefficients;

wherein, starting with the current priority level being the highest priority level among all collections of coefficients, all the collections of coefficients are examined one at a time, wherein for a collection of coefficients with priority level equal to the current priority level, the first un-encoded coding unit according to the local coding order is encoded and the priority level of the said collection of coefficients is reduced by one, wherein after all the collections of coefficients are examined, the current priority level is decreased by one and all the collections of coefficients are examined again, and the process continues iteratively until the total amount of bits used is greater than the target bit rate at which point the global minimum rate-distortion slope among all the coding units of all the collections of coefficients is found and more encoding is performed in all the collections of coefficients, and wherein for each collection of coefficients, all the un-encoded coding units are encoded according to the local coding order until the rate-distortion slope is smaller than the global minimum rate-distortion slope and then the rate-distortion optimised rate-distortion slope is computed and used to select the optimal truncation for the coding units.

21. (Withdrawn) A method according to claim 19 wherein the rate-distortion slope is a function of the rate value which is the amount of bits needed to encode the said coding unit, or a first neighboring coding unit according to the local coding order of the said collection of coefficients and the distortion value is the distortion reduction due to the encoding of the said coding unit of the said collection of coefficients, or the encoding of a second neighboring coding unit according to the local coding order of the said collection of coefficients.

22. (Withdrawn) A method according to claim 21 wherein the rate-distortion value is a fractional number with the denominator being the said rate value and the numerator being the said distortion value for each said coding unit.

23. (Withdrawn) A method according to claim 21 wherein the rate-distortion value is a fractional number with the denominator being the said rate value and the numerator being the said distortion value for each said coding unit, multiplied by a scaling factor value.

24. (Currently Amended) The~~A~~ method according to claim 14 in which the code-blocks are examined according to the global coding order.

25. (Withdrawn) A method according to claim 19 in which the priority level of each said code-block is equal to the total number of coding units needed to fully specify the said code-block.

26. (Withdrawn) A method according to claim 19 in which the collections of coefficients are the code-blocks of coefficients in the discrete wavelet transform domain of the image or image tile, and the coding unit can be the significance pass, refinement pass or cleanup pass of JPEG2000.

27. (Withdrawn) A method according to claim 19 in which the priority level of each said code-block is a linear function of the total number of bit planes needed to fully describe the wavelet coefficients.

28. (Currently Amended) An article of manufacture ~~software product for allocating or controlling the amount of bits for the encoding of source data, said software product including means for enabling the steps of~~comprising:

a storage medium; and

a plurality of programming instructions stored on the storage medium and configured to program an apparatus to:

(i) defin~~e~~ing ~~the~~ a target bit rate for ~~the~~ encoding of ~~the~~ source data;

(ii) defin~~e~~ing collections of coefficients of the source data;

(iii) defin~~e~~ing a first coding order of the ~~said~~ collections of coefficients;

(iv) defin~~e~~ing a plurality of coding units and corresponding allowable truncation points for each said collection of coefficients;

(v) defin~~e~~ing a second coding order of the ~~said~~ coding units for each said collection of coefficients;

(vi) defin~~e~~ing a rate value and a distortion value for each said coding unit of each said collection of coefficients;

(vii) defin~~e~~ing a threshold value for each said coding unit of each said collection of coefficients;

wherein said ~~software product~~plurality of programming instructions is configured to program the apparatus to operate~~s~~ such that, starting from the first coding unit according to the ~~said~~ local coding order of a ~~said~~ particular collection of coefficients, if a predetermined termination criterion is not met for a particular coding unit, include the ~~said~~ particular coding unit ~~will be included~~ in ~~the~~ an output code-stream, and if the ~~said~~ termination criterion is met for the particular coding unit, ~~the~~ terminating an encoding of the particular collection of coefficients ~~is terminated and no further coding unit according to the said local coding order of the said collection of coefficients will be encoded~~.

29. (Currently Amended) ~~A software product~~The article of manufacture as claimed in claim 28 wherein said collections of coefficients of the data are code-blocks.

30. (Currently Amended) The article of manufacture ~~A software product~~ as claimed in claim 28 ~~in which~~wherein the ~~said~~ rate value is ~~the~~ an amount of bits needed to encode the ~~said~~ particular coding unit, or a first neighboring coding unit according to the local coding order, of the ~~said~~ collection of coefficients and the ~~said~~ distortion value is either ~~the~~ a distortion reduction due to ~~the~~ an encoding of the ~~said~~ particular coding unit of the ~~said~~ particular collection of coefficients, or ~~the~~ an encoding of a second neighboring coding unit according to the local coding order of the ~~said~~ collection of coefficients.

31. (Currently Amended) ~~A software product~~The article of manufacture according to claim 30 wherein the plurality of programming instructions is further configured to program the appratus to ~~in which a rate-distortion value is~~ computed from the ~~said~~ rate value and the ~~said~~ distortion value for ~~each said~~said the particular coding unit ~~of each said collection of coefficients~~, and wherein the ~~said~~ termination criterion is that the rate-distortion value is below a threshold.

32. (Currently Amended) ~~A software product~~The article of manufacture according to claim 31 in which the ~~said~~ rate-distortion value is a fractional number with ~~the~~ a denominator being the ~~said~~ rate value and ~~the~~ a numerator being the ~~said~~ distortion value for ~~each said~~said the particular coding unit ~~of each said collection of coefficients~~.

33. (Currently Amended) ~~A software product~~The article of manufacture according to claim 31 in which the ~~said~~ rate-distortion value is a fractional number with ~~the~~ a denominator being the ~~said~~ rate value and ~~the~~ a numerator being the ~~said~~ distortion value for each said coding unit.

34. (Currently Amended) ~~A software product~~The article of manufacture according to claim 31 in which the threshold value is a predetermined constant common to either all the

collections of coefficients, or ~~can be different values such that a predetermined value is common to~~ all the coding units of ~~a~~ the particular collection of coefficients, less than all coding units of the particular collections of coefficients, or ~~can be different values for different collections of coefficients and different coding units~~no coding units.

35. (Currently Amended) ~~A software product method~~The article of manufacture according to claim 31 in which the threshold value is a fractional number with ~~the~~ a denominator being ~~the~~ a difference between the target bit rate and ~~the~~ a total amount of bits used to encode all ~~the~~ past code-blocks according to the global coding order and all ~~the~~ earlier coding units of the particular current collection of coefficients according to the local coding order, and ~~the~~ a numerator being ~~the~~ an amount of distortion if the encoding terminates at ~~that~~ the particular coding unit or a neighboring coding unit according to the local coding order.

36. (Currently Amended) ~~A software product~~The article of manufacture according to claim 31 in which the threshold value is ~~the~~ a product of (a) a fractional number with ~~the~~ a denominator being ~~the~~ a difference between the target bit rate and ~~the~~ a total amount of bits used to encode all ~~the~~ past collections of coefficients according to the global coding order and all ~~the~~ earlier coding units of the particular current collection of coefficients according to the local coding order, and ~~the~~ a numerator being ~~the product of the~~ an amount of distortion if the encoding terminates at ~~that~~ the particular coding unit, or a neighboring coding unit according to the local coding order, and (b) an additional weighting factor.

37. (Currently Amended) ~~A software product~~The article of manufacture according to claim 28 in which the collections of coefficients ~~are~~ the code-blocks of coefficients of the source data in ~~the~~ a data transform domain.

38. (Currently Amended) ~~A software product~~The article of manufacture according to claim 28 in which the collections of coefficients are ~~the~~ code-blocks of coefficients in ~~the~~ a

data transform domain, and the particular coding unit ~~can be~~is ~~any~~ an intermediate coding pass.

39. (Currently Amended) ~~A method~~The article of manufacture according to claim 38 wherein the data transform domain is ~~the~~ a discrete wavelet domain ~~in JPEG2000~~ and the intermediate coding pass is ~~the~~ a significance pass, a refinement pass or a cleanup pass ~~of JPEG2000~~.

40. (Currently Amended) ~~A software product~~The article of manufacture according to claim 28 in which the collections of coefficients are ~~the~~ code-blocks of coefficients in ~~the~~ a data transform domain, and the coding order is predefined.

41. (Currently Amended) ~~A software product~~The article of manufacture according to claim 28 in which the collections of coefficients are ~~the~~ code-blocks of coefficients in ~~the~~ a data transform domain of data formed by ~~the~~ a difference of a first source data and a second source data.

42. (Withdrawn) A software product for allocating or controlling the amount of bits for the encoding of source data, said software product including means for enabling the steps of:

(i) defining the target bit rate for the encoding of the data;

(ii) defining collections of coefficients of the source data in the source data domain or in a data transform domain;

(iii) defining a first global coding order of the said collections of coefficients;

(iv) defining a plurality of coding units and corresponding allowable truncation points for each said collection of coefficients;

(v) defining a second local coding order of the said coding units for each said collection of coefficients;

(vi) defining a priority level of each said collection of coefficients;

(vii) defining a global priority level for the said data;

wherein said software product operates such that, starting with the global priority level being the highest priority level among all collections of coefficients, all the collections of coefficients are examined one at a time, wherein for a collection of coefficients with priority level equal to the global priority level, the first un-encoded coding unit according to the local coding order is encoded and the priority level of the said collection of coefficients is reduced by one, wherein after all the collections of coefficients are examined, the global priority level is decreased by one and all the collections of coefficients are examined again, and the process continues iteratively until it terminates when the total amount of bits used is greater than the target bit rate, or when all the details of all the collections of coefficients have been encoded.

43. (Withdrawn) A software product as claimed in claim 42 wherein in the case of termination when the total bits exceed the target bit rate, the last coding units being encoded immediately before the total bits exceed the target bit rate may or may not be removed from the output code-stream.

44. (Withdrawn) A software product as claimed in claim 42 wherein in the case of termination when the total bits exceed the target bit rate, some additional un-encoded coding units of some code-blocks may or may not be encoded.

45. (Withdrawn) A software product as claimed in claim 42 wherein said collections of coefficients are code-blocks of coefficients in a data transform domain.

46. (Withdrawn) A software product for allocating or controlling the amount of bits for the encoding of source data, said software product including means for:

(i) defining the target bit rate for the encoding of the data;

(ii) defining collections of coefficients of the source data;

(iii) defining a first global coding order of the said collections of coefficients;

(iv) defining a plurality of coding units and corresponding allowable truncation points for each said collection of coefficients;

(v) defining a second local coding order of the said coding units for each said collection of coefficients;

(vi) defining a priority level of each said collection of coefficients;

(vii) defining a rate-distortion value for each said coding unit of each said collection of coefficients;

wherein said software product operates such that, starting with the current priority level being the highest priority level among all collections of coefficients, all the collections of coefficients are examined one at a time, wherein for a collection of coefficients with a priority level equal to the current priority level, the first un-encoded coding unit according to the local coding order is encoded and the priority level of the said collection of coefficients is reduced by one, wherein after all the collections of coefficients are examined, the current priority level is decreased by one and all the collections of coefficients are examined again, and the process continues iteratively until the total amount of bits used is greater than the target bit rate and the encoded coding unit with the least rate-distortion slope is removed and wherein this process is repeated until the total amount of bits used is less than or equal to the target bit rate.

47. (Withdrawn) A software product for allocating or controlling the amount of bits for the encoding of source data, said software product including means for enabling the steps of:

(i) defining the target bit rate for the encoding of the data;

(ii) defining collections of coefficients of the source data;

(iii) defining a first global coding order of the said collections of coefficients;

(iv) defining a plurality of coding units and corresponding allowable truncation points for each said collection of coefficients;

(v) defining a second local coding order of the said coding units for each said collection of coefficients;

(vi) defining a priority level of each said collection of coefficients;

(vii) defining a rate-distortion value for each said coding unit of each said collection of coefficients;

wherein said software product operates such that, starting with the current priority level being the highest priority level among all collections of coefficients, all the collections of coefficients are examined one at a time, wherein for a code-block with priority level equal to the current priority level, the first un-encoded coding unit according to the local coding order is encoded and the priority level of the said collection of coefficients is reduced by one, wherein after all the collections of coefficients are examined, the current priority level is decreased by one and all the collections of coefficients are examined again, and the process continues iteratively until the total amount of bits used is greater than the target bit rate at which point the global minimum rate-distortion slope among all the coding units of all the collections of coefficients is found and more encoding is performed in all the collections of coefficients, and wherein for each collection of coefficients, all the un-encoded coding units are encoded according to the local coding order until the rate-distortion slope is smaller than the global minimum rate-distortion slope and then the rate-distortion optimised rate-distortion slope is computed and used to select the optimal truncation for the coding units.

48. (Withdrawn) A software product according to claim 46 wherein the rate-distortion slope is a function of the rate value which is the amount of bits needed to encode the said coding unit, or a first neighboring coding unit according to the local coding order of the said collection of coefficients and the distortion value is the distortion reduction due to the encoding of the said coding unit of the said collection of coefficients, or the encoding of a second neighboring coding unit according to the local coding order of the said collection of coefficients.

49. (Withdrawn) A software product according to claim 48 wherein the rate-distortion value is a fractional number with the denominator being the said rate value and the numerator being the said distortion value for each said coding unit.

50. (Withdrawn) A software product according to claim 48 wherein the rate-distortion value is a fractional number with the denominator being the said rate value and the

numerator being the said distortion value for each said coding unit, multiplied by a scaling factor value.

51. (Currently Amended) ~~A software product~~The article of manufacture according to claim 41 in which plurality of programming instructions are further configured to program the apparatus to examine the code-blocks ~~are examined~~ according to the global coding order.

52. (Withdrawn) A software product according to claim 46 in which the priority level of each said code-block is equal to the total number of coding units needed to fully specify the said code-block.

53. (Withdrawn) A software product according to claim 46 in which the collections of coefficients are the code-blocks of coefficients in the discrete wavelet transform domain of the image or image tile, and the coding unit can be the significance pass, refinement pass or cleanup pass of JPEG2000.

54. (Withdrawn) A software product according to claim 46 in which the priority level of each said code-block is a linear function of the total number of bit planes needed to fully describe the wavelet coefficients.

55. (Currently Amended) An ~~A~~apparatus ~~for allocating or controlling the amount of bits for the encoding of source data, said software product including means for enabling the steps of~~comprising:

(i) means for defining ~~the~~ a target bit rate for ~~the~~ encoding ~~of the~~source data;

(ii) means for defining collections of coefficients of the source data;

(iii) means for defining a first coding order of the ~~said~~ collections of coefficients;

(iv) means for defining a plurality of coding units and corresponding allowable truncation points for each said collection of coefficients;

(v) means for defining a second coding order of the ~~said~~ coding units for each said collection of coefficients;

(vi) means for defining a rate value and a distortion value for each said coding unit of each said collection of coefficients;

(vii) means for defining a threshold value for each said coding unit of each said collection of coefficients;

wherein said apparatus operates such that, starting from ~~the~~ a first coding unit according to the ~~said~~ local coding order of a said collection of coefficients, if a predetermined termination criterion is not met for a particular coding unit, the ~~said~~ particular coding unit will be included in ~~the~~ an output code-stream, and if the ~~said~~ termination criterion is met, ~~the~~ an encoding of the collection of coefficients is terminated and no further coding unit according to the ~~said~~ local coding order of the ~~said~~ collection of coefficients will be encoded.

56. (Currently Amended) ~~A~~The apparatus as claimed in claim 55 wherein said collections of coefficients of the data are code-blocks.

57. (Currently Amended) The a~~A~~pparatus as claimed in claim 55 in which the ~~said~~ rate value is ~~the~~ an amount of bits needed to encode the ~~said~~ particular coding unit, or a first neighboring coding unit according to the local coding order, of the ~~said~~ collection of coefficients and the ~~said~~ distortion value is ~~the~~ a distortion reduction due to the encoding of the ~~said~~ particular coding unit of the ~~said~~ collection of coefficients, or the encoding of a second neighboring coding unit according to the local coding order of the ~~said~~ collection of coefficients.

58. (Canceled)

59. (Canceled)

60. (Canceled)

61. (Canceled)

62. (Canceled)

63. (Canceled)

64. (Canceled)

65. (Canceled)

66. (Canceled)

67. (Canceled)

68. (Canceled)

69. (Withdrawn) Apparatus for allocating or controlling the amount of bits for the encoding of source data, said apparatus including means for enabling the steps of:

(i) defining the target bit rate for the encoding of the data;

(ii) defining collections of coefficients of the source data in the source data domain or in a data transform domain;

(iii) defining a first global coding order of the said collections of coefficients;

(iv) defining a plurality of coding units and corresponding allowable truncation points for each said collection of coefficients;

(v) defining a second local coding order of the said coding units for each said collection of coefficients;

(vi) defining a priority level of each said collection of coefficients;

(vii) defining a global priority level for the said data;

wherein said apparatus operates such that, starting with the global priority level being the highest priority level among all collections of coefficients, all the collections of coefficients are examined one at a time, wherein for a collection of coefficients with priority level equal to the global priority level, the first un-encoded coding unit according to the local

coding order is encoded and the priority level of the said collection of coefficients is reduced by one, wherein after all the collections of coefficients are examined, the global priority level is decreased by one and all the collections of coefficients are examined again, and the process continues iteratively until it terminates when the total amount of bits used is greater than the target bit rate, or when all the details of all the collections of coefficients have been encoded.

70. (Withdrawn) Apparatus as claimed in claim 69 wherein in the case of termination when the total bits exceed the target bit rate, the last coding units being encoded immediately before the total bits exceed the target bit rate may or may not be removed from the output code-stream.

71. (Withdrawn) Apparatus as claimed in claim 69 wherein in the case of termination when the total bits exceed the target bit rate, some additional un-encoded coding units of some code-blocks may or may not be encoded.

72. (Withdrawn) Apparatus as claimed in claim 69 wherein said collections of coefficients are code-blocks of coefficients in a data transform domain.

73. (Withdrawn) Apparatus for allocating or controlling the amount of bits for the encoding of source data, said apparatus including means for:

(i) defining the target bit rate for the encoding of the data;

(ii) defining collections of coefficients of the source data;

(iii) defining a first global coding order of the said collections of coefficients;

(iv) defining a plurality of coding units and corresponding allowable truncation points for each said collection of coefficients;

(v) defining a second local coding order of the said coding units for each said collection of coefficients;

(vi) defining a priority level of each said collection of coefficients;

(vii) defining a rate-distortion value for each said coding unit of each said collection of coefficients;

wherein said apparatus operates such that, starting with the current priority level being the highest priority level among all collections of coefficients, all the collections of coefficients are examined one at a time, wherein for a collection of coefficients with a priority level equal to the current priority level, the first un-encoded coding unit according to the local coding order is encoded and the priority level of the said collection of coefficients is reduced by one, wherein after all the collections of coefficients are examined, the current priority level is decreased by one and all the collections of coefficients are examined again, and the process continues iteratively until the total amount of bits used is greater than the target bit rate and the encoded coding unit with the least rate-distortion slope is removed and wherein this process is repeated until the total amount of bits used is less than or equal to the target bit rate.

74. (Withdrawn) Apparatus for allocating or controlling the amount of bits for the encoding of source data, said apparatus including means for enabling the steps of:

(i) defining the target bit rate for the encoding of the data;

(ii) defining collections of coefficients of the source data;

(iii) defining a first global coding order of the said collections of coefficients;

(iv) defining a plurality of coding units and corresponding allowable truncation points for each said collection of coefficients;

(v) defining a second local coding order of the said coding units for each said collection of coefficients;

(vi) defining a priority level of each said collection of coefficients;

(vii) defining a rate-distortion value for each said coding unit of each said collection of coefficients;

wherein said apparatus operates such that, starting with the current priority level being the highest priority level among all collections of coefficients, all the collections of coefficients are examined one at a time, wherein for a code-block with priority level equal to the current priority level, the first un-encoded coding unit according to the local coding order is encoded and the priority level of the said collection of coefficients is reduced by one, wherein after all the collections of coefficients are examined, the current priority level is

decreased by one and all the collections of coefficients are examined again, and the process continues iteratively until the total amount of bits used is greater than the target bit rate at which point the global minimum rate-distortion slope among all the coding units of all the collections of coefficients is found and more encoding is performed in all the collections of coefficients, and wherein for each collection of coefficients, all the un-encoded coding units are encoded according to the local coding order until the rate-distortion slope is smaller than the global minimum rate-distortion slope and then the rate-distortion optimised rate-distortion slope is computed and used to select the optimal truncation for the coding units.

75. (Withdrawn) Apparatus according to claim 73 wherein the rate-distortion slope is a function of the rate value which is the amount of bits needed to encode the said coding unit, or a first neighboring coding unit according to the local coding order of the said collection of coefficients and the distortion value is the distortion reduction due to the encoding of the said coding unit of the said collection of coefficients, or the encoding of a second neighboring coding unit according to the local coding order of the said collection of coefficients.

76. (Withdrawn) Apparatus as claimed in claim 75 wherein the rate-distortion value is a fractional number with the denominator being the said rate value and the numerator being the said distortion value for each said coding unit.

77. (Withdrawn) Apparatus as claimed in claim 75 wherein the rate-distortion value is a fractional number with the denominator being the said rate value and the numerator being the said distortion value for each said coding unit, multiplied by a scaling factor value.

78. (Canceled)

79. (Withdrawn) Apparatus as claimed in claim 73 in which the priority level of each said code-block is equal to the total number of coding units needed to fully specify the said code-block.

80. (Withdrawn) Apparatus as claimed in claim 73 in which the collections of coefficients are the code-blocks of coefficients in the discrete wavelet transform domain of the image or image tile, and the coding unit can be the significance pass, refinement pass or cleanup pass of JPEG2000.

81. (Withdrawn) Apparatus as claimed in claim 73 in which the priority level of each said code-block is a linear function of the total number of bit planes needed to fully describe the wavelet coefficients.

82. (New) A method comprising:

successively encoding, by an encoding device according to a global coding order, a plurality of collections of coefficients of source data, the successively encoding comprising:

dividing a first successive one of the plurality of collections of coefficients, according to the global coding order, into a plurality of coding units; and

determining one of the plurality of coding units that is either a first, according to a local coding order, of the plurality of coding units that fails to meet a rate/distortion threshold or an only one of the plurality of coding units that fails to meet the rate/distortion threshold;

coding coded versions of all coding units that precede, according to the local coding order, the one of the plurality of coding units; and

generating a bit stream including the coded versions of all coding units that precede, according to the local coding order, the one of the plurality of coding units of each successive one of the plurality of collections of coefficients.

83. (New) The method of claim 82 wherein the successively encoding comprises sequentially encoding each of the plurality of coding units according to the local coding order until the one of the plurality of coding units is determined to fail to meet the rate-distortion threshold.

84. (New) The method of claim 83 wherein the successively encoding further comprises terminating the sequentially encoding once the one of the plurality of coding units is determined and proceeding to successively encode a next successive one of the plurality of collections of coefficients according to the global coding order.

85. (New) The method of claim 82 wherein the plurality of collections of coefficients is a plurality of code blocks of coefficients of the source data in a data transform domain.

86. (New) The method of claim 82 wherein the determining comprises sequentially calculating, according to the local coding order for each of the plurality of coding units, a corresponding rate value and a corresponding distortion value, deriving a corresponding rate/distortion value, and determining whether the rate/distortion value is greater than or equal to the rate/distortion threshold.

87. (New) The method of claim 86 wherein each of the corresponding rate values is a corresponding number of bits required to encode the corresponding coding units or a first adjacent coding unit according to the local coding order and each of the corresponding distortion values is a measure of a distortion reduction achieved by coding the corresponding coding units or a second adjacent coding unit according to the local coding order.

88. (New) The method of claim 87 wherein the deriving of the corresponding rate/distortion values includes at least calculating corresponding ratios of the corresponding rate values and the corresponding distortion values.

89. (New) The method of claim 82 wherein the successively encoding comprises calculating the rate/distortion threshold based at least upon a difference between a target bit rate and a total amount of bits used to encode all previously-encoded collections of coefficients according to the global coding order and all previously-encoded coding units of a currently-encoded collection of coefficients according

to the local coding order, and a distortion measure of the successively encoding that would result if the encoding terminates at either a currently-processed coding unit or a neighboring coding unit according to the local coding order.

90. (New) The method of claim 89 wherein the plurality of coding units comprise a coding pass of the bit plane of the successive one of the plurality of coefficients.

91. (New) The method of claim 82 wherein the generating occurs in a first time frame and the successively encoding further comprises coding second coded versions of a plurality of second coding units of a second successive one of the plurality of collections of coefficients in a second time frame, later in time and distinct from the from the first time frame.